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COALITION *for* CLIMATE
SOLUTIONS

Free Economies *are* Clean Economies

A study of the correlation between economic freedom, limited government, open markets, private property rights, and environmental performance around the world.

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Business school students learn that “what gets measured gets improved.” That insight is often attributed to management guru Peter Drucker, but it makes so much sense that many business leaders have applied it across the decades.

The concepts of “measuring” and “improving” were on our minds at The Heritage Foundation decades ago when we developed the Index of Economic Freedom. We knew that economic freedom was vital, but nobody had ever tried to categorize it or compare the level of freedom in one country to the level of freedom in another. By measuring levels of economic freedom across regions and cultures and over time, we could point to trends.

The least surprising trend we documented was the most important trend: countries with higher levels of economic freedom provide higher standards of living for their people.

The trip toward economic freedom is like walking up a Stairmaster: as you climb, you enjoy more benefits. However, you never reach the top. Economic conditions are perfectible, but never perfect. By publishing the Index, we created a “race to the top,” with economies competing to improve their annual scores. They found ways to reduce regulation, encourage entrepreneurship, and spiral upward. Everyone was incentivized to improve year over year.

Today something similar is underway in another important realm: the environment.

Everyone everywhere wants a clean environment. We all breathe the same air and drink the same water. Pollution anywhere eventually becomes pollution everywhere. The question is how to deliver a cleaner environment. As you will read in the following pages, the answer is an environmental “race to the top” using an “all of the above” energy strategy patterned on our decades-old race toward economic freedom.

As former Treasury Secretary Larry Summers once put it, “nobody ever washed a rented car.” People take care of things they own, and don’t care as much about things that don’t belong to them. That is also described as the tragedy of the commons.

Free economies are clean economies, for this same reason. Economic freedom encourages people to “own” their environment, and they do a better job of taking care of it. People who own their environment will replace oil with batteries when it makes sense to do so. They will substitute solar for coal when they can. They will do this automatically, because doing so delivers economic and environmental benefits.

As the following report puts it, “If greener industrialization is more cost-effective, developing countries will have the economic incentive to pursue those technologies as opposed to their higher-emitting counterparts.” Another way to put it is that as economic freedom increases, economic growth leads to environmental improvement.

Read on to learn about the “why” and the “how.” The following report delves into property rights and shows how capitalism is delivering the technological progress that will provide a greener future for everyone. Progress will be the key that unlocks a better economic and environmental future.



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FREE ECONOMIES ARE CLEAN ECONOMIES



“The point of calling attention to progress is not self-congratulation but identifying the causes so we can do more of what works.” Steven Pinker, Enlightenment Now (2018) ^[1]

In his November 2020 essay Political Freedom and Human Prosperity, Stanford University professor Larry Diamond concluded that democracy “is the best system for delivering human prosperity.”

Moreover, Diamond wrote that “almost all of the world’s most prosperous countries (save those that came upon a windfall of natural resource wealth) are democracies.” Economic freedom and private property, he emphasized, are “preconditions for political freedom” and “a crucial bulwark against an overweening state and eventual political tyranny.” ^[2] Diamond also pointed out that more than 80 percent of the most economically free countries are democracies. Conversely, nearly 80 percent of the most economically unfree nations are authoritarian. This correlation is strongest for the world’s “most liberal democracies in political terms” as they “generally have the freest economies.” ^[3]

Diamond’s writing needs to be committed to memory by lawmakers and political leaders worldwide if they aim to enrich the lives of the people they aim to serve as public officials. Free societies make our lives easier, healthier, and safer by providing the goods, services, and economic opportunity that improve the human condition. Critically, free economies offer the surest pathway to make the world a better place for future generations. Economic freedom, defined in more detail below, brings all sorts of residual benefits with respect to the protection of our civil and political liberties.



ONE OF THOSE RESIDUAL BENEFITS IS A CLEANER ENVIRONMENT

A country's commitment to the principles of economic freedom increases wealth and the available resources to invest in environmental protection and to invest in technological progress. Free economies incentivize environmental stewardship by allowing citizens to have well-defined and legally protected property rights. Economic freedom provides the foundation for the private sector to produce more goods even as people use fewer resources. Open, competitive markets more flexibly meet the needs of consumers, including consumer demand for environmentally friendly products. As this **Free Economies are Clean Economies** report lays out, understanding the relationship between economic freedom and environmental stewardship is essential to human flourishing and to addressing the world's great environmental challenges, including climate change.

Free societies make our lives easier, healthier, and safer by providing the goods, services, and economic opportunity that improve the human condition. Critically, free economies offer the surest pathway to make the world a better place for future generations.

THE RELATIONSHIP BETWEEN ECONOMIC FREEDOM AND ENVIRONMENTAL PERFORMANCE



An environmental mantra that nearly everyone can endorse is that each should work to “leave the campground cleaner than when you got there.”

As Scout Movement founder Robert Baden-Powell said, “Try and leave this world a little better than you found it.” [4]

Of course, tidying up a campground is one thing. Many of the environmental problems that society faces, whether air pollution, invasive species, ocean plastics, or global climate change, are much more complex. These challenges span many decades, involve many actors, and require many solutions. They must involve robust discussions of costs versus benefits, trade-offs, and opportunity costs. Action proves difficult when competing priorities are vying for resources, when policymakers must make value judgments, and when rent seekers look out for their interests. Action may prove even more difficult if the economic costs are frontloaded to consumers and taxpayers today, while potential environmental returns may not be realized for many years.

Whatever the environmental threat may be, policies that unleash economic freedom are critical for empowering people to flourish and improve the environment. Policies should embolden the private sector to deliver bottom-up solutions and ensure that public actions are transparent, cost-effective and achieve the desired outcomes.

That raises the question: what is economic freedom?



For nearly three decades, the Washington D.C.-based Heritage Foundation has published an Index of Economic Freedom. The Index measures economic freedom by scoring each country in the following categories.

1. **Rule of law:** property rights, judicial effectiveness, and government integrity;
2. **Government size:** fiscal health, government spending and tax burden;
3. **Regulatory efficiency:** business freedom, labor freedom, and monetary freedom; and
4. **Open markets:** trade freedom, investment freedom, and financial freedom.

Heritage compiles data, which are publicly available, from sources such as the African Development Bank, the Asian Development Bank, the European Commission, the Economist Intelligence Unit, the International Monetary Fund, the World Bank, various U.S. government agencies, Oxford University's World Economic Outlook, and the World Economic Forum. [5]

Countries earn aggregate scores and fall into one of five categories -- Free (scores of 80 to 100), Mostly Free (70 to 80), Moderately Free (60 to 70), Mostly Unfree (50 to 60), and Repressed (50 and below). In the 2022 Index, only seven countries received the most elite designation as "Free" nations [6] while 27 others fall into the "Mostly Free" category, including the United States.

The most fleeting connections to economic freedom are found in the 57 "Mostly Unfree" countries and the 32 "Repressed" countries. An additional six countries could not be assessed due to the complete societal breakdowns there. [7]

While the Index of Economic Freedom does not measure environmental performance, the components that make a country economically free are also critical components to a clean environment. One of the most comprehensive measurements of a country's environmental performance is Yale University's Environmental Performance Index (EPI). Produced every other year, the EPI similarly scores a country on a 0-100 scale and includes 180 countries in its 2022 report. [8]

The EPI gives a country a score based on 40 environmental indicators broken down into eleven issue categories. These fall into three broader categories consisting of:

1. **Climate change:** climate change mitigation;
2. **Environmental health:** air quality, sanitation & drinking water, heavy metals, and waste management;
3. **Ecosystem vitality:** biodiversity & habitat, ecosystem services, fisheries, water resources, acid rain, and agriculture.

Whatever the environmental threat may be, policies that unleash economic freedom are critical for empowering people to flourish and improve the environment.

The report’s technical appendix details how the authors weight each of the eleven issue categories and how the authors weight each of the 40 environmental indicators. [9]

Using these two indices, we can explore the importance of economic freedom on environmental performance. When correlating the Index of Economic Freedom and the Environmental Performance Index, one finds a strong, positive relationship between economically free economies and clean economies. [10]

Association Between Environmental and Economic Indices

A comparison between economic indices and the Environmental Performance Index.



In fact, Yale’s report emphasizes:

Considering the strong association between EPI and Index of Economic Freedom (IEF) scores, the 2022 EPI drivers analysis suggests that democratically-elected governments and free markets are best positioned to respond to environmental challenges and adopt policy preferences that drive countries toward a more sustainable future. Weaker state capacity for legislation and policymaking also explains why wealthy autocracies tend to underperform their democratic peers on the EPI (Iwinska et al., 2019). In the case of developing country democracies, a focus on good governance may enhance environmental gains as economic growth accelerates.

Policymakers striving to maintain economic growth while simultaneously improving environmental performance should note that some countries with high rates of manufacturing and services still achieve top EPI scores. These results show that, while some countries are growing at the expense of environmental health and ecosystem vitality, all countries can make conscious policy choices to protect the environment and thereby achieve more sustainable development. [11]

Digging deeper into correlations with specific environmental indicators, Yale's report finds:

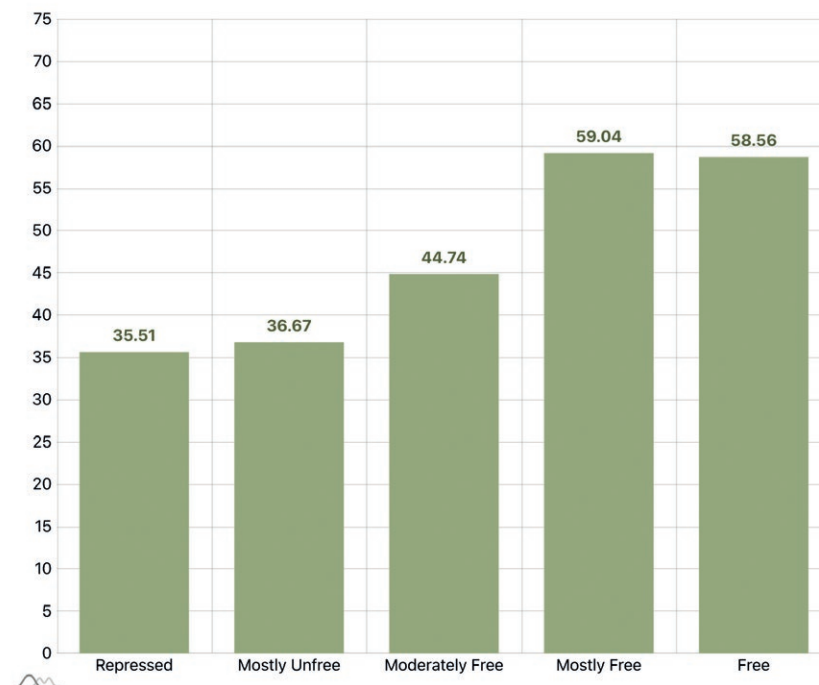
The IEF has positive correlation with good performance on Air Quality, Drinking Water & Sanitation, Heavy Metals, and Waste Management. These results offer some support for the hypothesis that economic liberalism and open markets are associated with improvements in environmental quality. Economic liberalism may enable better environmental performance by fostering technological innovation and spurring companies to undertake voluntary sustainability commitments (Ambec et al., 2013), although other research underscores the environmental costs of poorly-regulated industries (Elliott and Esty, 2021). [12]

Using similar metrics to the Heritage Index, the Vancouver-based Fraser Institute publishes an Economic Freedom of the World ranking. [13] In the Fraser Institute's 2022 report, the authors reviewed 721 empirical papers that used the Economic Freedom of the World Index for its modeling. [14] These papers analyzed how economic freedom relates to desirable outcomes for a society, including income, human rights, growth, corruption, and many others.

One variable the authors analyzed is environmental outcomes, which include "CO2 emissions and other measures of pollution as well as environmental outcomes like biodiversity." [15] While the environmental outcome had one of the higher percentages of bad correlations of the twelve dependent indicators, it is important to underscore the normatively good correlation for the environment was 2.5 times higher than the negative ones (41.7% to 16.7%). [16]

Environmental Performance and Economic Freedom Summary

Average Country Score in the Environmental Performance Index



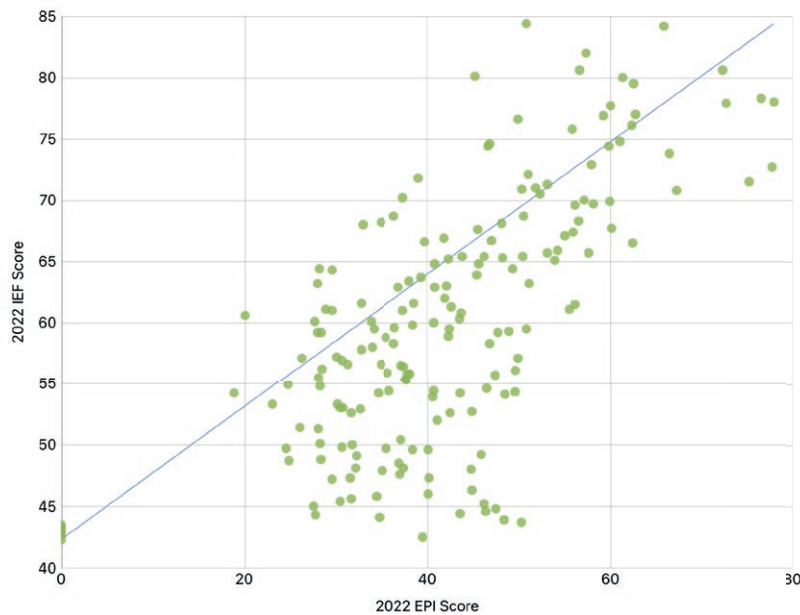
Environmental Performance and Economic Freedom

Listed below are several countries that fall in the same quintile for both environmental performance and economic freedom.

Lowest Quintile	Middle Low	Middle	Middle High	Highest Quintile
Burundi	Honduras	Spain	Taiwan	Singapore
Algeria	South Africa	Bahrain	United Kingdom	New Zealand
Equatorial New Guinea	Benin	Poland	Estonia	Australia
Liberia	Ghana	Thailand	Canada	Switzerland
Dem. Rep. Congo	Trinidad & Tobago	Romania	Denmark	Ireland

Environmental Performance and Economic Freedom

There is a strong correlation (0.655) between a country's EPI and IEF index scores.



ECONOMIC FREEDOM EQUALS WEALTH AND WEALTH EQUALS HEALTH



One of the primary reasons that economic freedom has a positive correlation with other important human and societal quality metrics is because economically free countries have higher levels of per capita income.

Citing a literature review of the role economic freedom has had on wealth, the Fraser Institute's report emphasizes that, "Virtually without exception, these studies have found that countries with institutions and policies more consistent with economic freedom have higher investment rates, more rapid economic growth, higher income levels, and a more rapid reduction in poverty rates." [17]

Higher levels of income are imperative to better environmental outcomes for many reasons. More wealth provides more resources to devote to environmental protection. Greater levels of prosperity mean people will place a higher priority on environmental protection because they can afford to do so after more immediate needs (energy, food, drinking water) are met. Richer countries have more funds to invest in public services such as sanitation and garbage collection. There is a greater imperative to regulate and spend on pollution abatement to internalize the social costs. As Yale's report emphasizes, "wealth, which enables investments in environmental protection, leads to higher EPI scores by allowing countries to upgrade environment-related infrastructure and adopt better pollution-control technologies." [18]



The report goes on to say:

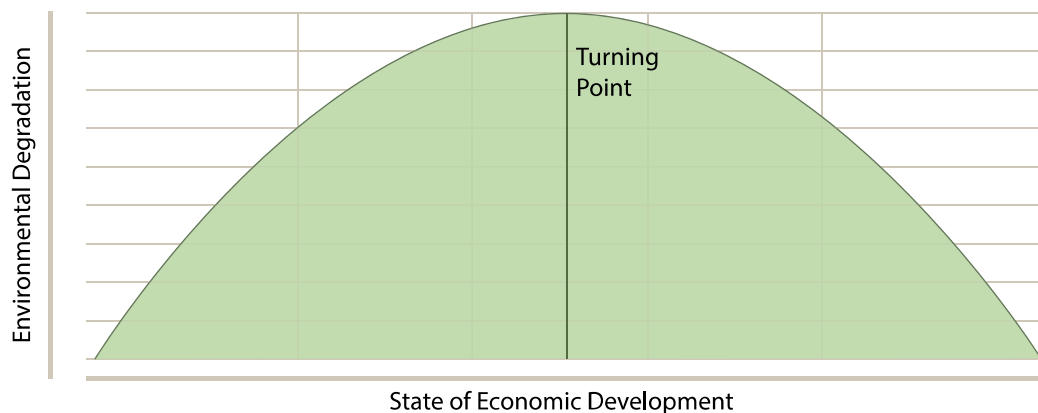
A consistent finding across Environmental Performance Index reports and other environmental analyses is that wealthy democracies rise to the top of rankings. The 2022 EPI results reflect this pattern. Countries that perform well have demonstrated a commitment to all areas of sustainability, supporting policy goals with strong regulations and financial investments that lead to real-world gains in environmental performance. [19]

The visual depiction of wealth's positive impact on the environment is the environmental Kuznets curve (EKC). [20] The EKC is an inverted-U relationship between both pollution and economic development where growth from industrialization initially results in higher levels of pollution. Over time, however, that wealth means more resources are available for environmental protection. Through policies, accumulation of knowledge and technological progress, public and private sectors reduce unwanted environmental byproducts and internalize the external costs of pollution.

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Environmental Kuznets Curve

The environmental Kuznets curve (EKC) is a hypothesized relationship between various indicators of environmental degradation and per capita income.



Greater wealth and free economies contribute to environmental progress in other meaningful ways. Societies gather more knowledge, which helps gain a better understanding of risks and costs that pollution and environmental threats cause as well as a better understanding of the trade-offs that must be made.

In addition, more wealth spurs investment in cleaner, more efficient processes and products. Innovation and economic growth beget more innovation, technological progress, and growth. A cousin of the EKC, called the environmental transition curve, emphasizes the role of technological improvements in bending pollution curves backward. [21]

While technological advancements drive gross domestic product, studies have shown two-way causality. For example, a March 2022 study in Sustainability:

[S]howed that an increase in technological innovation indicators (such as spending on education, number of patents for residents and non-residents, R&D expenditures, number of researchers in R&D, hightech exports, and scientific and technical research papers.) leads to an increase in economic growth in the short term and the long-run with a long-run and two-way causal relationship between technological innovation and GDP, and short-run causation spanning from technological innovation to GDP.

The study also concluded that technological innovation has a direct impact on the sustainability of a country's economic growth, which is why it is crucial to adopt strong policies that encourage international investors to allocate capital for development in developing countries and thus encourage more research and development. [22]

More wealth spurs investment in cleaner, more efficient processes and products. Innovation and economic growth beget more innovation, technological progress, and growth.



Peer reviewed literature has demonstrated the EKC exists for several ecological variables. [23] The moment when the inverted U in the Kuznets curve starts bending downward depends on many factors and does not uniformly apply to all emissions or to all countries. With respect to the EKC and greenhouse gas emissions reductions, a 2020 Research of Industrial Economies paper found encouraging results. The paper combines emissions growth, GDP per capita and rankings on the Fraser Institute's Economic Freedom of the World Index to find that "available data from 155 countries observed in five-year periods between 1975 and 2015 indicate that economic freedom not only reduces overall CO2 emissions but also shifts the top point of the EKC to the left. As such, the evidence suggests that the transition to lower emissions technology appears at an earlier stage in economically free societies." [24]

The latter point is especially important. Arguably the most effective way to bend emissions curves is to make the price of cleaner resources and technologies, also known as the green premium, less expensive. That could be cleaner-burning natural gas (as America's shale revolution has demonstrated), rapidly declining prices for solar panels, cheaper batteries, or an innovative, less polluting new manufacturing process. If greener industrialization is more cost-effective, developing countries will have the economic incentive to pursue those technologies as opposed to their higher-emitting counterparts.

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STRONGER ECONOMIES ARE MORE RESILIENT ONES



More wealth also enables communities to build more resilient infrastructure and production and adapt to a changing climate.

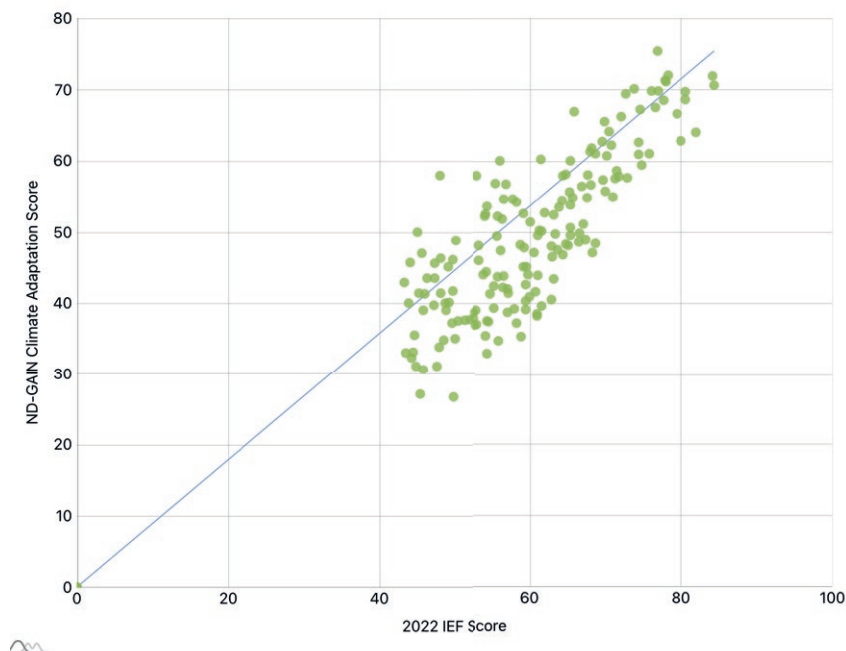
Constructing stronger levees, sea walls, and more resilient infrastructure have helped save lives and protect communities. Freer, wealthier economies also have better access to advanced technologies that more accurately communicate the risk of natural disasters and aid in preparation. Early detection systems, visualization tools, up-to-date flood maps, computer modeling, satellite, and radar are several tools that scientists employ to track weather and storms. Affordable, reliable heat in the winter and air conditioning in the summer offer protection against extreme weather. Further, researchers are developing crops that better withstand heatwaves and droughts. [25] These investments are not costless but can be a cost-effective solution to reduce the risks and costs of extreme weather.



Conversely, extreme weather hits vulnerable communities harder. As Reason’s science correspondent Ron Bailey succinctly writes: When bad weather meets poverty, it kills people. [26] Bailey points to research in the latest Intergovernmental Panel on Climate Change (IPCC) report that finds, unsurprisingly, that as countries’ wealth goes up, their climate vulnerability (in human mortality and loss of economic assets) goes down. [27] Encouragingly, the IPCC’s research finds “a clear decreasing trend in both human and economic vulnerability, with global average mortality and economic loss rates that have dropped by 6.5 and nearly 5 times, respectively, from 1980–1989 to 2007–2016.” [28]

Index of Economic Freedom Compared with Climate Adaptation

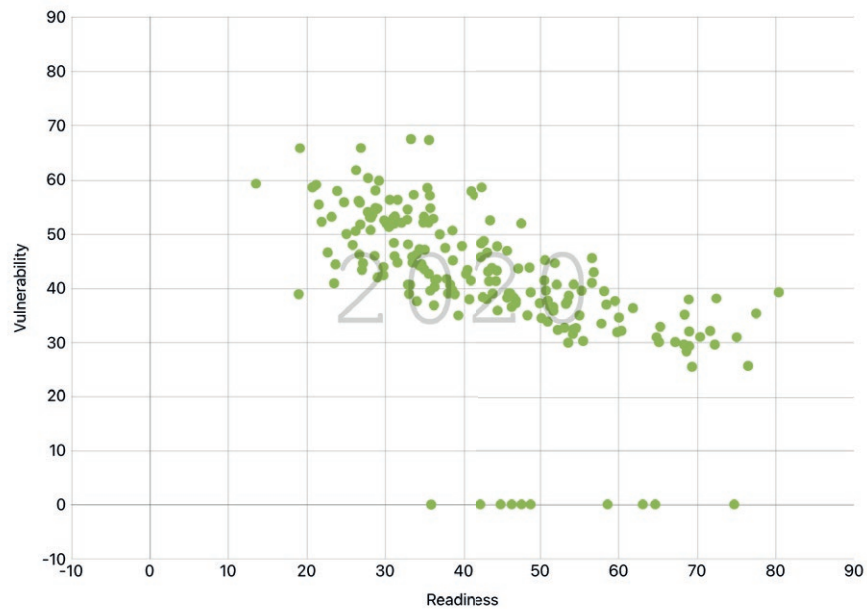
Comparison of IEF and the ND-GAIN Climate Adaptation Score which summarizes a country’s vulnerability to climate change in combination with its readiness to improve resilience.



One helpful tool that measures a country’s resiliency is Notre Dame Global Adaptation Initiative’s Country Index. The index “uses 20 years of data across 45 indicators to rank over 180 countries annually based on their level of vulnerability, and their readiness to successfully implement adaptation solutions.” [29] Given the connection between economic freedom and wealth, there is also a strong, positive correlation between those countries that are most economically free and those countries that are the most resilient and least vulnerable. For developed and developing countries alike, policy reforms should empower people to accrue wealth to better adapt to climate change but also empower communities to adapt faster and more efficiently. [30]

Notre Dame Global Adaptation Initiative's Country Index

A measure of a country's vulnerability to the effects of climate change and readiness to implement solutions.



ND-GAIN Country Index

The ND-GAIN Country Index summarizes a country's vulnerability to climate change and other global challenges in combination with its readiness to improve resilience.

Top 10 Rankings		Bottom 10 Rankings	
Norway	75.4	Liberia	33.8
Finland	72	Zimbabwe	33.1
Switzerland	71.9	Afghanistan	33
Sweden	71.3	Niger	32.9
Denmark	71.1	Sudan	32.3
Singapore	70.6	Dem. Rep. of the Congo	31.1
Austria	70.1	Eritrea	31.1
Germany	69.8	Guinea-Bissau	30.6
Iceland	69.8	Central African Rep.	27.1
New Zealand	69.7	Chad	26.7

COMPARING THE DOMINICAN REPUBLIC AND HAITI - A NATURAL EXPERIMENT



A striking example of how different economic and political philosophies influence climate adaptation is seen with the paths taken by the Dominican Republic and Haiti.

Although there are some geographic differences, the two countries share the same island, Hispaniola. As recently as 60 years ago, the countries' gross domestic product (GDP) per capita were roughly the same.

Policies have since changed that. The Dominican Republic ranks in the "Moderately Free" category of the 2022 Index of Economic Freedom and had a gross domestic product per capita of \$7,268 (in 2020). [31] Haiti ranks in the "Mostly Unfree" category and is teetering on slipping into "Repressed." [32] Out of 177 countries ranked, Haiti is 145 and has a GDP per capita of \$1,272 (in 2020). [33] Regrettably, Haitians have lost more lives to natural disasters than Dominicans, and suffer economically and environmentally. In 2016 Madison Park of CNN reported: "In 2004, Hurricane Jeanne made landfall at the eastern tip of the Dominican Republic. The flooding from Jeanne killed an estimated 3,000 people in Haiti, according to a report from the National Hurricane Center. Meanwhile, only 19 deaths were reported in the Dominican Republic." [34] Park also reports that an earthquake in 2010 impacted the entire island but no one outside of Haiti died. [35]





Haiti lacks the resources to build more resilient infrastructure, to prepare for natural disasters, or to respond to them. Poor environmental policies, including rapid and widespread deforestation, exacerbated Haiti's environmental challenges and made its people more susceptible to flooding and soil erosion. [36] The legacy of environmental mismanagement dates back to the French colonization of Haiti where deforestation cleared the way for plantations. [37] Even so, the lack of economic freedom has undoubtedly contributed to Haiti's continuing economic plight, poor environmental record, and inability to adapt to climate change. Haiti ranks 173 out of 180 countries on Yale's Environmental Performance Index and 168 out of 182 in Notre Dame Global Adaptation Initiative's Country Index. [38]

WHY ECONOMIC FREEDOM MATTERS: DIGGING INTO THE PRINCIPLES



To better comprehend why a positive relationship between economic freedom and environmental performance exists, it is important to dig deeper into what aspects of policy make a country economically free.

We know why a country scores highly on the Index of Economic Freedom. As measured by the Heritage Index, a country would have a strong rule of law, fiscal health, regulatory efficiency, and open markets. Similarly, the Fraser Institute measures economic freedom by analyzing a country's size of government, legal system and security of property rights, sound money, freedom to trade internationally, and regulation.

The underlying factors that make a country economically free create a culture of entrepreneurship and innovation that empowers people to meet consumers' needs, raise levels of human welfare, and improve the environment. Understanding how these indicators contribute to human prosperity and better environmental outcomes should encourage policymakers around the world to pursue the necessary changes to spur bottom-up solutions to our greatest economic and environmental challenges.

PROPERTY RIGHTS INCENTIVIZE STEWARDSHIP



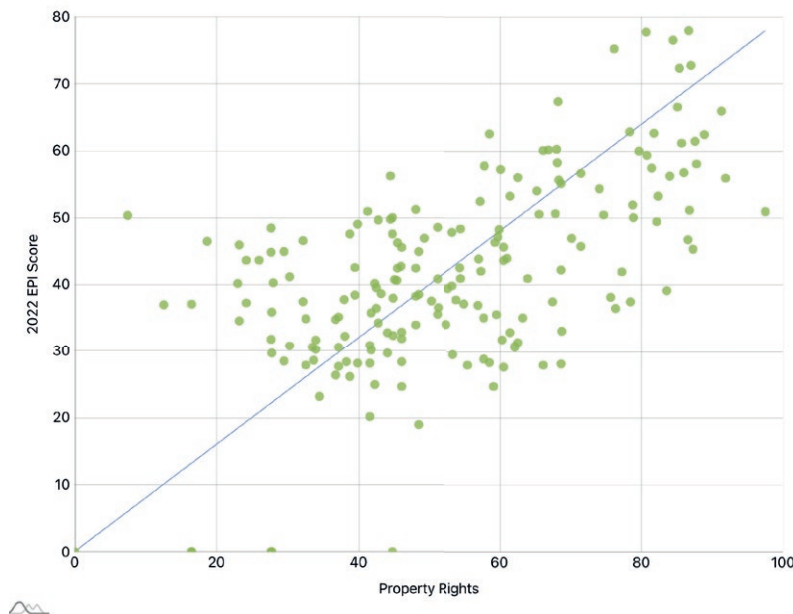
Property rights incentive stewardship because property owners benefit economically and environmentally from taking care of the asset they own.

In explaining why property rights are so important, Larry Diamond writes, “The existence of private property constitutes a check on tyranny, and this is why so many incipient dictators seek to eliminate or politically subjugate it once they consolidate power.”¹⁵ The same holds true for intellectual property rights. Well-protected intellectual property encourages more innovation, including for cleaner energy, agriculture and manufacturing.



Property Rights and Environmental Performance Index

This chart shows the relationship between a country's degree of freedom when it comes to property compared to their EPI score.



Conversely, when everyone owns something, no one does. Property rights are why the fridge in your home is likely to be much cleaner than the fridge in your office. The tragedy of the commons illustrates the environmental and economic harm caused by the absence of rights. For instance, consider a river flush with salmon that people can fish for commercial sale. Without a system of property rights in place, the incentive for the fisherman is to pull out as many salmon as possible because if he doesn't, another fisherman will. The result may be a temporary gain but will eventually result in overconsumption and a full depletion of the resources. Property rights incentivize sustainable consumption so that the resource can be a productive asset well into the future.

Well-defined and legally enforced property rights have prevented overgrazing, overfishing, deforestation [39], and animal poaching. [40] Countries with protected property rights have more access to clean drinking water, sanitation systems, and less poverty. [41] Economist Elinor Ostrom won the Nobel Prize for her work demonstrating how collective property rights at the community level prevent such problems by empowering the people who are best incentivized to manage the resources properly. [42] Much like economic freedom, a strong, positive correlation exists between property rights and environmental outcomes.

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ECONOMIC FREEDOM IS THE FOUNDATION FOR INNOVATION AND EFFICIENCY



The incentives for people to innovate, create, and make products that consumers need and enjoy are immense and widespread.

Motivations range from cutting costs, helping people, saving the planet, or establishing a legacy as a person who made the world a better place. It is unmistakable that the health of the planet and the people on it will benefit from more Silicon Valleys and the policy frameworks that allow Silicon Valleys to emerge organically. Free economies are hubs for innovation and technological progress. New inventions and rates of technological change reduce pollution and solve environmental problems more cost effectively. Andrew McAfee, principal research scientist at MIT Sloan School of Management, compellingly argues in his book *More from Less*:

Whereas throughout the Industrial Era increases in human population and prosperity came at the expense of the earth, that pattern no longer holds in America and other rich countries. Instead, we're now able to improve the human condition while also treading more lightly on the world: consuming fewer resources, using less cropland, reducing pollution, bringing back species we'd pushed to the brink of extinction, and so on.

McAfee points to capitalism and technological progress as the primary reasons for this shift. Both small and large technological improvements can make peoples' lives more convenient and more enjoyable while minimizing environmental impact. Progress comes in many ways: phone apps that make public bus routes more efficient by bypassing empty bus stops. ^[43] It comes in the form of natural sprays that prevent fresh fruit and vegetables from decaying in the grocery store. ^[44] Or it can come from breakthrough advancements like small modular nuclear reactors that provide affordable, emissions-free power.

On a larger scale, the result is big gains in efficiency and productivity and hence, more from less. In the United States, efficiency improvements are strongly evident in energy consumption and agricultural production. For more than half a century (and prior to energy efficiency standards) energy intensity has improved dramatically.

[45] Measured by energy consumption per dollar of output or gross domestic product, the U.S. Energy Information Administration estimates that “By 2050, the domestic energy consumption associated with each dollar of U.S. economic growth is less than half of what it was in 2005.”

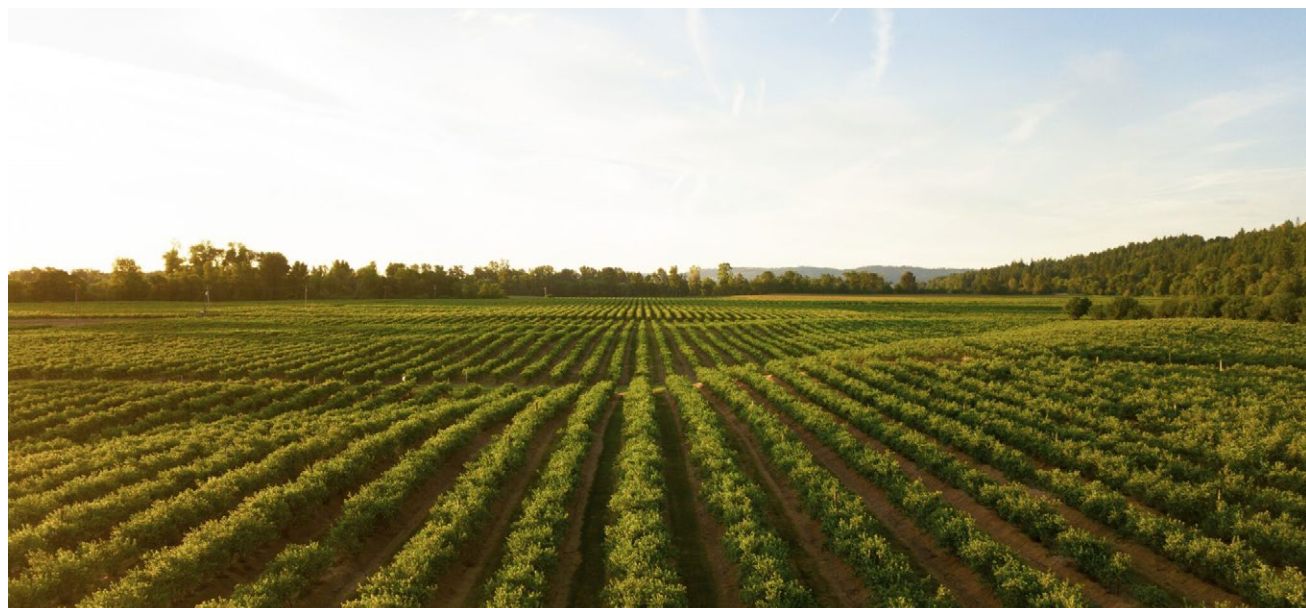
[46] Notably, the efficiency improvements will occur in all major energy consuming sectors of the economy (industrial, residential, commercial, and transportation).

[47] The U.S. is one of several dozen countries that have been able to decouple economic growth from carbon dioxide emissions, even after accounting for offshoring production. [48]

American farmers depict another success story with respect to significant efficiency gains. Farmers and ranchers are essential to putting safe, secure food on the table for families in the United States and around the world. The people working in the domestic agricultural sector are also among the world’s leading innovators. By investing in new technologies, inventing new techniques, and identifying cost savings, farmers and ranchers have dramatically improved their efficiency. They are generating higher yields with less land, labor, and other input costs.

A 2018 U.S. Department of Agriculture analysis of farm productivity found that, “[i]nnovations in animal and crop genetics, chemicals, equipment, and farm organization have enabled continuing output growth while using much less labor and farmland. As a result, total agricultural output nearly tripled between 1948 and 2015—even as the amount of labor and land (two major inputs) used in farming declined by about 75 percent and 24 percent, respectively.” [49]

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Agriculture analysts Alex Smith and Dan Blaustein-Rejto of the Breakthrough Institute estimate that, “If US corn yields had remained stagnant from 1961 to 2020, corn farmers would have needed additional land the size of France to produce the same total amount of corn in 2020.” [50]

The Dutch, who ranked eighth in the Index of Economic Freedom, are another model for agricultural efficiency. In 2017, *National Geographic* profiled the Dutch agricultural sector as the future of farms and sustainable production. [51] The article details how family farms collaborate with scientists and research universities to continually innovate and produce more food with fewer inputs. By significantly reducing the use of water, pesticides, and antibiotics, Dutch farmers are making good on the country’s goal of producing “twice as much food using half as many resources.” [52]

Given the notable economic and environmental benefits of productivity gains, it is important to underscore the policies and laws that empower innovators to innovate. The emergence of Silicon Valley or more recently, Silicon Slope in Utah, is not as simple as following a recipe in a cookbook. The culture of risk-taking, consumer-driven focus, readily available venture capital, diverse talent, and world-class research institutions cannot be built overnight or easily replicated. Nevertheless, federal, state, and local governments can enact policies that encourage and support more innovation. The conditions that make a country economically free (open markets, rule of law, protected property rights, lower tax burden, and regulatory efficiency) are the same conditions that incentivize more innovation, investment, and entrepreneurship.

One measure for analyzing a country’s regulatory climate for starting and operating a business is the World Bank’s “Ease of Doing Business Index.” The World Bank uses ten major indices including: “starting a business, dealing with construction permits, getting electricity, registering property, getting credit, protecting minority investors, paying taxes, trading across borders, enforcing contracts, and resolving insolvency.” [53] Similar to the relationship between the Index of Economic Freedom and Environmental Performance Index, a strong, positive correlation exists between the ease of starting and running a business and environmental performance. [54]

Although the World Bank discontinued the report after an investigation found instances of data manipulation (artificially increasing the scores of China and other countries), [55] the importance of the relationship still holds true. In fact, findings of data manipulation indicate how important these factors are for innovation, economic competitiveness, and environmental well-being. [56] China and others were willing to pretend to be good places to start a business, if only to encourage other people to invest there.

The conditions that make a country economically free (open markets, rule of law, protected property rights, lower tax burden, and regulatory efficiency) are the same conditions that incentivize more innovation, investment, and entrepreneurship.

INSTITUTIONS MATTER



For free, clean economies to thrive, they must have support from strong institutions. Property rights, for instance, do little good if they are not legally enforced and protected. Good governance holds polluters accountable and reduces corruption.

As George Mason economist Tyler Cowen emphasizes, “A strong state is distinct from a very large or tyrannical state. A good strong state should see the maintenance and extension of capitalism as one of its primary duties, in many cases its #1 duty.” [57]

Good governance, freedom from corruption, and a strong rule of law set the rules of the game and enforce them evenly across all parties. A free society also encourages citizens to demand change by protecting a free press, promoting community townhalls, holding ballot initiatives and much more. As the Yale report stresses, “these features of effective governance drive good environmental performance by ensuring environmental laws are uniformly enforced and responsive to new information.”

[58]

Good governance holds polluters accountable and reduces corruption.

Uniform application of the law and responsiveness to new information should be priorities for any country. A level playing field where institutions enforce laws uniformly should prevent corruption and reduce the incentive to lobby for special privileges. Moreover, responsiveness and flexibility are critical to the laws and regulations that protect the environment for all institutions. The pace of innovation and advancements in scientific knowledge far outpace government policy.



Regulatory rigidity creates challenges when laws passed decades ago fail to account for changes in information or technological improvements. A critical component for a healthier environment is having a policy framework that empowers the private sector to innovate and deploy cleaner technologies. In that regard, business freedom is essential. A major component of the Index of Economic Freedom measurement of regulatory efficiency is the “extent to which the regulatory and infrastructure environments constrain the efficient operation of businesses.” [59]



One example in the U.S. of a well-intended law that now often constrains environmental progress is the National Environmental Policy Act (NEPA). NEPA is more than half a century old. Since it was passed, many federal, state, and local environmental laws have been enacted and amended. The result is a complex web of unclear, overlapping, and complex requirements that slow reviews and stifle investment without providing meaningful environmental benefits. [60] Projects that could deliver clean energy, restore healthy ecosystems, and meet the needs of consumers are held up for years in courts or through a molasses-like regulatory process. Despite a broader and louder chorus understanding the need for permitting reform, several politicians and environmental NGOs decry changes as gutting bedrock environmental laws rather than what the changes truly are: modernization. A more flexible, updated process would accelerate projects that reduce emissions and enhance conservation projects.

Flexibility can also help disperse environmentally friendly technologies across the globe faster. An Organization of Economic Cooperation and Development on environmental innovation and transfer found that:

Flexibility of policy regimes not only increases domestic rates of innovation, it also ensures that markets are not fragmented across different countries. With prescriptive regimes the market will be fragmented into different regulatory silos. Given the risks associated with expenditures on research and development, and the economies of scale required to recover such expenditures, it is important that regulatory regimes in 'source' countries not constrain the potential markets for any induced innovations. In addition, flexible policy regimes in 'recipient' countries allow potential adopters of innovations to access a much wider range of technologies available on international markets.

The more that institutions can adapt with changes in information and focus on outcomes as opposed to outputs, the better off a country's policies, economy, and environment will be.

ECONOMIC FREEDOM IS THE SUREST ROUTE TO ENVIRONMENTAL STEWARDSHIP



Private property rights, strong institutions, regulatory efficiency, and open markets will drive economic growth and environmental performance in the right direction.

Good governance and enforcing the rule of law are necessary to protect property rights and hold polluters accountable. Effective governments should direct public expenditures in ways that are responsive, transparent, outcome-based, and carefully weigh costs and benefits.

Importantly, bottom-up solutions driven by entrepreneurs, investors and consumer demand demonstrate that the private sector is in the best position to raise levels of prosperity and lower levels of pollution. Open, competitive markets will drive down green premiums to help developing countries grow their economies with a smaller environmental footprint. Technological advancements to reduce pollution should work together with eradicating economic poverty (including energy poverty and global hunger), because generating higher levels of wellbeing rightfully remains a priority for developing nations. A degrowth agenda that traps people in poverty is not an option. Conversely, a pro-growth agenda that decouples emissions will continue to make people better off while reducing human-caused environmental impacts.

As we strive to solve the world's biggest economic and environmental challenges, policymakers from around the world must turn to the principles that make countries open, free societies. Free economies will provide the surest route to higher levels of human welfare and global environmental stewardship.

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